



Fact Sheet

EPA's Detroit Exposure and Aerosol Research Study (DEARS)

EPA is conducting the Detroit Exposure and Aerosol Research Study (DEARS) to understand how accurately air quality information collected at community monitors reflects what individuals living in neighborhoods are exposed to every day. The study will provide needed information on defining what factors affect individual exposures to various particulate matter (PM) and air toxic sources.

The EPA has standards to regulate particulate matter which is known to have serious health effects, including heart and lung effects. The EPA also regulates certain air toxics and is conducting research on others to determine if regulations are needed. This research will contribute to the scientific information that is needed to inform decision making on standards to protect air quality.

Background

During the last decade, EPA and its collaborators have conducted a series of human exposure studies investigating PM and selected air toxics. The studies, conducted in more than 10 U.S. communities, investigated the magnitude and variability of individuals' personal exposures and the resulting health effects. These studies did not attempt to identify fully the pollutant sources impacting these individuals. However, study results indicated numerous factors that may be responsible for some variability in the air that individuals breathed, including, for example, age, frequency and type of activity, health status, and the type or age of the home. Findings also indicated that pollutant exposure may vary greatly among individuals living in the same area.

Impact of the Study

The DEARS will inform the scientific community on approaches that can be used to evaluate health effects associated with PM constituents and PM from various sources by determining if outside monitoring data can be used as a substitute for individual exposure in human studies. New techniques from DEARS will be used to develop data on which PM sources are responsible for exposure and will help to determine the most effective approach for mitigating those exposures.

This study is not designed to identify or provide a remedy for any single environmental issue in the Detroit area. DEARS will identify the contribution of various pollutant sources (automotive, industrial and natural sources) at the community and neighborhood levels. Preliminary data analyses will be performed following the completion of each summer and winter monitoring season. A complete set of validated data is expected to be available in 2008.

Study Description

DEARS will involve 120 people who will participate in the study during the summer and winter from 2004-2007. Each year, approximately 40 of the participants will wear personal monitoring vests, undergo indoor and outdoor air monitoring at their residence, and provide information about their daily activities. Each person will participate in five days of summertime monitoring and five days of wintertime monitoring.

Participants are described as adults over the age of 18 living in a detached single-family residence in selected areas of Detroit. Each participant must be able to walk without assistance, a

nonsmoker, capable of providing informed consent concerning their participation, and plan to live in the same home for a nine-month period. The study does not exclude participation based on race, sex, occupation, religious affiliation or socio-economic status.

The study will be conducted in Wayne County where the population density allowed recruitment of study participants who live near various types of pollutant sources. Detroit has neighborhoods that have air characteristics that are different from one another. Also, the Detroit area has distinct summer and winter climates that may affect how individuals are exposed to various air pollutants. Finally, there already exists a broad scope of support and interest from Detroit's local community action groups, state air quality agencies and local university researchers.

Research Partners

Organizations already involved in the DEARS include the Michigan Department of the Environment, the University of Michigan and the Community Action against Asthma and other scientists from EPA. Health effect scientists at EPA have been collecting large volumes of PM for use in toxicological screenings. It is hoped that data collected from DEARS, in concert with toxicological data, will help to identify the toxicity of various sources impacting the study areas. EPA also has been working with scientists from Health Canada and Environment Canada on research involving cross-border issues. Further efforts to deepen this cooperation are in progress.

An associated multi-year health effects study involving children, the Detroit Children's Health Study, will be performed by the EPA and will use data collected in the DEARS exposure study. This particular EPA health study is scheduled to start in the summer of 2005. Information about the Detroit Children's Health Study may be obtained from Dr. Lucas Neas, EPA, at (919) 966-9961.

For more information

Please contact Mr. Ron Williams, principal investigator at Williams.Ronald@epa.gov; (919) 541-2957, or toll-free at 1-866-EPA-DEAR (1-866-372-3327). Find out more at the EPA's website: www.epa.gov/dears.

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